

What Works Clearinghouse



April 2011

WWC Quick Review of the Report “Achievement Effects of Four Early Elementary School Math Curricula: Findings for First and Second Graders”^{1,2,3}

What is this study about?

The study examined the relative effectiveness of four early elementary school math curricula: *Investigations in Number, Data, and Space*; *Math Expressions*; *Saxon Math*; and *Scott Foresman-Addison Wesley Mathematics*.

The study analyzed data on more than 8,000 first- and second-grade students in 110 schools in 12 districts in 10 states.

In each of the participating school districts, schools were randomly assigned to use one of the four curricula. A random sample of approximately 10 students per classroom was included in the analysis.

The study measured the relative effects of the four curricula by comparing end-of-year test scores on a nationally normed math assessment developed for the Early Childhood Longitudinal Study–Kindergarten (ECLS–K) for first graders and on a similar assessment adapted for this study for second graders.

Features of the Four Elementary School Math Curricula Examined

Investigations in Number, Data, and Space: a student-centered approach that focuses on student understanding rather than specific problem-solving procedures

Math Expressions: a blend of student-centered and teacher-directed approaches that emphasizes learning concepts through direct instruction and real-world examples

Saxon Math: a teacher-directed approach that relies on scripted lessons and daily student practice and that focuses on teaching students procedures and strategies for problem solving

Scott Foresman-Addison Wesley Mathematics: an approach that combines teacher-directed instruction with differentiated student activities and allows teachers to select relevant and appropriate materials, including manipulatives

(continued)

¹ Agodini, R., Harris, B., Thomas, M., Murphy, R., Gallagher, L., & Pendleton, A. (2010). *Achievement effects of four early elementary school math curricula: Findings for first and second graders* (NCEE 2011-4001). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.

² An earlier report in this series focused on one cohort of first graders: *Achievement effects of four elementary school math curricula: Findings from first graders in 39 schools* (NCEE 2009-4052). The WWC rated that study in an earlier quick review (it can be found at: <http://ies.ed.gov/ncee/wwc/publications/quickreviews/QRReport.aspx?QRID=117>). The study that is the subject of the current quick review examines (1) first-grade effects during the first year of curriculum implementation among all 109 study schools (both cohort-one and cohort-two schools combined), and (2) examines second-grade effects during the first year of curriculum implementation among the 71 cohort-two schools.

³ Absence of conflict of interest: This study was conducted by staff from Mathematica Policy Research, which also operates the WWC. For this reason, no staff from this organization participated in the review of the study.

Quick reviews examine evidence published in a study (supplemented, if necessary, by information from author queries) to assess whether that study's design meets WWC evidence standards. Quick reviews rely on the effect sizes and significance levels reported by study authors.

The WWC rating applies only to the summarized results, and not necessarily to all results presented in the study.

What did the study find?

For first graders, the authors found no statistically significant differences in student math achievement among the curricula after adjusting results for multiple curricula comparisons within the same analysis.

For second graders, one difference was statistically significant after taking multiple curricula comparisons into account. Second-grade students attending *Saxon Math* schools scored 0.17 standard deviations higher than students attending *Scott Foresman-Addison Wesley Mathematics* schools, roughly equivalent to moving a student from the 50th to the 57th percentile in math achievement.

WWC Rating

The research described in this report meets WWC evidence standards

Strengths: This was a well-implemented randomized controlled trial.